


# TECHNICAL MEMORANDUM

## Utah Coal Regulatory Program

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October 20, 2008

TO: Internal File

FROM: David W. Darby, Lead, Senior Environmental Scientist 

RE: Mine Plan Rewrite-R645 Format, Savage Services Corp., Savage Coal Terminal, C070022, Task #2955

### SUMMARY:

The Division received an updated Mining and Reclamation Plan from Savage Coal Services on April 9, 2008. When Savage Services Corporation (SSC) became the operator they adopted and followed their approved permit. SSC has initiated four amendments to the MRP since they reactivated the site on March 16, 2006, which update the plan in specific areas. During the technical reviews, it was noticed the plan's format was out of date with the newer R645 rule format. Maps were large and cumbersome and most of them were set with the mylar format. The Permittee also needed to ensure all land use information is updated and submitted. The inadequacies needed to be updated prior to the 5-year permit

During a meeting on August 8, 2006, the Division requested that the plan be updated to reflect the R645 format and to make the MRP more clear and concise. The Permittee voluntarily agreed to update the MRP to reflect the R645 format.

Two programs have gained more recognition in the review process, since the coal terminal closed and then reactivated. The U.S. Fish and Wildlife Department-Colorado River Endangered Fish Recovery Program, and the Cultural Resource-Archeological Inventory. The Permittee needs to evaluate the relevance of these programs to the current permit and update the MRP.

## **DEFICIENCY SUMMARY**

**R645-622.400** The Permittee should provide a map showing the location of the old reclaimed wells. [DWD]

## **TECHNICAL ANALYSIS:**

## **MAPS AND PLANS**

Regulatory Reference: 30 CFR 777.14; R645-301-140.

### **Analysis:**

The Permittee reworked all of the maps in the MRP. Some of the previous maps were formatted on mylar. Some are exceptionally large and others were old and marred. All maps are now have a digital format and can be easily edited and changed.

### **Findings**

The applicant has met the minimum requirements of this section.

## **ENVIRONMENTAL RESOURCE INFORMATION**

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

## **CLIMATOLOGICAL RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 783.18; R645-301-724.

### **Analysis:**

Climatological information is provided in Section 724.400. Table 7-15 shows the annual precipitation of 10.36 inches based on a 10 year monitoring period. Low monthly average is 0.36 inches in December and the high monthly average is 1.37 in August. The average mean temperature for the area is 51 degrees F. The average annual snowfall is 19.6 inches. The

prevailing wind direction is from the north through north-west during autumn, winter and spring with a shift to the south-southwest during late spring and summer. Table 7-16 summarizes the mean wind speeds for the site. The wind speed and direction is important at the terminal, because the wind can transport coal dust from the stacks of coal.

**Findings:**

The applicant has provided sufficient information for this section.

## **ALLUVIAL VALLEY FLOORS**

Regulatory Reference: 30 CFR 785.19; 30 CFR 822; R645-302-320.

**Analysis:**

### **Alluvial Valley Floor Determination**

Savage Coal Terminal is currently zoned for industrial use by Carbon County. Prior to December 17, 1973 (pre-SMCRA) the land was zoned agricultural Figure 7-7 shows the AVF and zoning area in the vicinity of the terminal.

**Findings:**

The Permittee has submitted sufficient information to address this section.

## **GEOLOGIC RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 784.22; R645-301-623, -301-724.

**Analysis:**

The Permittee has submitted information to address geologic resources in Chapters 6 and 7. The operator explains that the operation moves and cleans coal from mining operations. No coal is mined at the site. It is strictly a surface operation. Section 620 describes the regional geophysical setting of the site. SCT lies in the middle of Castle Valley. Its surface was originally covered with Quaternary alluvium, slope wash and pediment mantle material. In Section 622 the Permittee describes the geology below the surface. The logs of core holes drilled prior to plant construction are shown in Figure 6-2 and the core holes shown on Figure 6-3. Underlying the surface soils is the consolidated units of the Mancos Shale. Maxfield (1976) describes the Mancos Shale having three major marine shale transgressive sequences, separated by two sandstone delta complexes, which built from the west. The SCT sits on the middle Bluegate

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shale member. Cores taken at the site reveal that 20-25 feet below the surface lies a dark blue-gray dense mudstone with veins of calcite and gypsum. The upper 20 feet consists of weathered brown to gray semi-silty layers. The weathered surface sometimes contains lenses of gravelly material left behind as the overlying terrace eroded. Boreholes were drilled at the Savage Coal Terminal prior to plant construction. Plate 6-1 shows the geology of the site. Logs of the boreholes are presented Figure 6-2 Logs of the holes ore shown on Figure 6-3.

**Findings:**

The Permittee has addressed the minimum requirements of this section.

**HYDROLOGIC RESOURCE INFORMATION**

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

**Analysis:**

**Sampling and Analysis**

The Permittee has collected many years of water monitoring data. In Section 724.100 the Permittee describes the existence of 14 groundwater observation wells, has provided data to establish the shallow perched aquifer. Table 7-1 presents the data. The wells (actually piezometers have since been reclaimed (as of May 1999). Two shallow (20-22 feet) groundwater monitoring wells were installed in 2006 are being monitored at the site. The operator is also monitoring groundwater in an open well that collects water from the shallow perched aquifer that exists between the land surface and consolidated Bluegate Shale. Groundwater quality tends to run high, but as the Permittee has pointed out, the groundwater intercepted on the French drain is of better quality than that of the Price River, since the river picks up salts from the surrounding basin and irrigation return flow. Two surface sites are monitored on the permit area.

**Baseline Information**

Baseline water monitoring has long been established. The Permittee has submitted water monitoring data to the Division's water monitoring database, since they took over the operation. Some monitoring goes back to 1982.

**Baseline Cumulative Impact Area Information**

The Division has defined the cumulative impact area for the CHIA, based on information in the MRP and Section 728 describing the probable hydrologic consequences.

### **Probable Hydrologic Consequences Determination**

The probable hydrologic consequences determination is provided in Appendix 7-3. The operator claims that the terminal has operated over the past 28 years with no negative impacts. The Permittee claims the only negative impact from the proposed facilities would be from possible acid/toxic contamination of the groundwater from the coal or refuse. This potential impact will be minimized by regular testing of the refuse for acid/toxic potential, as well as regular monitoring of the groundwater.

The Permittee does not identify the disturbed area discharge as a potential for impacts. However, the Permittee has discussed the facilities and methods that are currently being used to ensure no disturbed area drainage leaves the site. Runoff from the disturbed area is directed into a series of 5 sedimentation points by a combination of collection ditches and culverts. All surface hydrologic structures are sized to carry runoff from a 10 yr.-24 hr precipitation event, including storage capacity of the sedimentation ponds. Sedimentation ponds 1,2 and 3 are in series and flow to Sedimentation Pond 6. Sedimentation pond 5 also flows to Sedimentation Pond 6. Before Sedimentation Pond 6 discharges it is sampled to meet the discharge requirements of the UPDES permit.

### **Groundwater Monitoring Plan**

The Permittee describes baseline ground water information in Section 724. SCT describes a very deep aquifer found in the Ferron Sandstone 500 feet below the terminal. The aquifer was identified by oil and gas wells drilled in the area. The water found in the Ferron Sandstone is brackish. The operation does not plan to use any water from the Ferron Sandstone. The great amount of clays and shales between the terminal and Ferron Sandstone prevent any contamination from operations.

The applicant has identified shallower water tables in the alluvium and weathered shales above the Bluegate shale. These groundwater sources are variable and discontinuous and have poor water quality. The information shows there is no regional groundwater table at the site. Aerial extent of the perched water tables could not be precisely determined.

Using well data the Permittee has described groundwater activity on and adjacent to the coal terminal. Figure 7-1 shows the typical ground water monitoring well design. The older wells (piezometers) CV0W, CV2W, CV3W, CV4W, CV5W, CV6W, CV7W, CV8W, CV9W, CV10W, CV11W, CV12, and CV13, drilled for CV Spur, have been decommissioned and reclaimed. Table 7-1 shows the ground water levels in the wells from 1980 through 1982. Table 7-1A shows the characteristics of the wells. Table 7-1 provides the well characteristics and water level information. A map showing the well locations is not provided. If the locations are known a map should be part of the MRP.

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CV1W (surface ditch), and CV14W (French drain) are still active monitoring sites. Two new shallow ground water monitoring wells S-1-GW and S-2-GW were drilled in 2006. These monitoring sites are shown on Plate 7-1.

Shallow ground water permeability and the storage coefficient were measured during a pump test at well CV6W. Tables 7-5 through 7-14 show the ground water quality for each sample collected at the wells. The second table presents the water quality standards for aquatic and agricultural use. Table 7-2 shows the pump test calculations for groundwater flow in Well CV6W.

During initial construction of if the site a French drain was built to intercept groundwater on the north and west sides. The drain collects groundwater at the interface of the weathered shale and consolidated shale. It is only about 8 feet at the south western end of the terminal and runs about 23 feet deep at the north east corner. A sump (culvert) collects the water from the drain which is ranges about 20 –25 gallons per minute. The water in the sump is used in the in the plant. The Permittee has a water right for water taken at the French drain.

### **Surface-Water Monitoring Plan**

The Permittee describes baseline surface water information in Section 724.200. The Permittee has submitted and characterized the surface water hydrology for the site. A water monitoring program has been developed that identifies the measured flows and quality of water on and adjacent to the terminal.

All stream channels in the vicinity of the terminal are ephemeral. Runoff from the terminal and adjacent areas flow to the Price River. The quality of the Price River is degraded at this lower level. All runoff over the terminal is directed to sedimentation ponds. Pond 6 receives the overflow from Ponds 1,2 and three and Pond 5. Pond 6 is the only outflow of disturbed area surface water from the terminal. All discharges from Sedimentation Pond 6 is monitored under the UPDES permit system. Natural surface runoff is poor with total dissolved solids ranging from 2000 to 3000 mg/L. Drainage areas on the permit and adjacent area are shown on Figure 7-4, subdrainages are shown on Figure 7-5. Plate 7-1 shows the locations of surface water monitoring. Two surface sites are monitored, CV14-W, an undisturbed drainage surface ditch and Pond 6, a UPDES discharge site. The operator has installed a system of culverts, ditches and berms on site to direct surface flow to the sedimentation ponds, Plates 7-1 and 7-1.

### **Findings:**

**R645-622.400** The Permittee shall provide a map showing the location of old reclaimed wells should be placed in the MRP.

## **MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

### **Analysis:**

#### **Affected Area Boundary Maps**

For hydrology the affected area lies within the Permit area. The permit area is shown on several maps. The hydrologic structures and surface runoff regime can be seen on Plates 7-1 and 7-2.

#### **Coal Resource and Geologic Information Maps**

A geologic map is submitted as Plate 6-1. Logs of the boreholes are presented Figure 6-2. Logs of the holes are shown on Figure 6-3.

#### **Existing Structures and Facilities Maps**

Plate 7-1 shows all the facilities on the Permit area. All hydrologic features are shown on Plates 7-1 and 7-2.

#### **Existing Surface Configuration Maps**

Plate 7-1 and 7-2 show the permit boundary and existing surface configuration.

#### **Monitoring and Sampling Location Maps**

Plate 7-1 shows the water monitoring locations.

#### **Subsurface Water Resource Maps**

There are no maps that show the subsurface water resources of the site. The Permittee should plot the data from Table 7-1 on a map and show the location of groundwater.

#### **Surface and Subsurface Manmade Features Maps**

Plate 7-1 shows the surface and subsurface manmade features. A list of the facilities and the dates when the structure was constructed are provided in section 511.100.

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### **Surface and Subsurface Ownership Maps**

A surface ownership map is provided as Plate 1-1. The subsurface is not used except for water monitoring. The subsurface is not used except for water monitoring. There are no maps that show the subsurface water resources of the site. However data in table 7-1 provides an insight to the location of shallow groundwater.

#### **Findings:**

The Permittee has addressed all areas of this section.

## **OPERATION PLAN**

### **MINING OPERATIONS AND FACILITIES**

Regulatory Reference: 30 CFR 784.2, 784.11; R645-301-231, -301-526, -301-528.

#### **Analysis:**

Savage Coal Terminal is a coal treatment, blending and loadout facility. No coal is mined at the site.

#### **Findings:**

The Permittee has submitted sufficient information to address this section.

### **EXISTING STRUCTURES:**

Regulatory Reference: 30 CFR 784.12; R645-301-526.

#### **Analysis:**

The applicant has provided several hydrologic maps showing the existing structures on the terminal facility, Plates 5-2, 7-1 and 7-2. A list of the structures is provided in Section 511.100. A small IBC area near the Price River is established for a pump that supplies water from the river to the preparation plant when supplies are low. The area showing the river pump and pipeline is shown on Plate 3-8.



## **Findings**

The Permittee has submitted sufficient information to address this section.

## **COAL RECOVERY**

Regulatory Reference: 30 CFR 817.59; R645-301-522.

### **Analysis:**

The Savage Coal Terminal is a coal processing operation. It cleans, sorts and mixes coal from other mines. There is no coal mining occurring at the site.

### **Findings:**

The Permittee has submitted sufficient information to address this section.

## **HYDROLOGIC INFORMATION**

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

### **Analysis:**

#### **General**

The Savage Coal Terminal sits near the middle of Castle Valley. A broad eroded plain lying between the Wasatch Plateau to the west, the Book Cliffs to the north and the San Rafael to the east. The coal terminal is relatively flat terrain draining toward the Price River.

#### **Groundwater Monitoring**

The Permittee monitors three groundwater monitoring sites, Table 7-17. Two groundwater drains have been installed at the Savage Coal Terminal in the past and are shown on Plate 7-1. The drain on the east side of the proper was installed to drain a boggy area to facilitate construction of the railroad grade. Flow from the drain gradually diminished after installation and eventually it stopped flowing. The drain was installed at the surface of the Bluegate shale

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just below the weathered shale and soils. The drain discharges a continuous flow of about 22 gpm into a 26 feet deep sump. The operator refers to this drain as the French Drain. The groundwater is used in the preparation plant and dust control at the site. The site, CV-1-W, is monitored during the 2<sup>nd</sup> and 4<sup>th</sup> quarters for flow. The Permittee has a water right for the water. The Permittee recently drilled two groundwater monitoring wells. S-1-GW is located on the north east corner of the terminal and S-2-GW is on the east side of the permit area. The new wells will be monitored quarterly for the first two years then bi-annually after that. Water quality will be checked according to Table 7-17. Water rights documentation is provided in Appendix 7-2.

### **Surface Water Monitoring**

The Permittee supplied sufficient information to address this section. Surface monitoring will be conducted at two sites on the permit area, Table 17-7. The sites are shown on Plate 7-1. An undisturbed drainage ditch runs from the western side of the permit area around the northern side to divert undisturbed drainage away from the terminal facilities. At the northeast end of the ditch the operator has established a surface water monitoring site, CV-14-W. Monitoring will consist of volume measurements conducted during the 2<sup>nd</sup> and 4<sup>th</sup> quarters. The other surface water monitoring site is at the discharge of Sedimentation Pond 6 The site is CV-15-W. Monitoring will be monthly in accordance with the UPDES permit. Results for all samples will be submitted to the DOGM database within 60 days following the end of each sampling cycle.

### **Acid- and Toxic-Forming Materials and Underground Development Waste**

The Permittee supplied information to address this section. The Permittee proposed to avoid acid and toxic forming material contamination several methods. First, the refuse pile has been tested and it does not contain any acid-or toxic-forming materials. All oils, greases and fuels will be stored within an enclosed concrete basin. Coal shipped to the terminal is tested at the mine for acid and toxic forming materials. Monitoring of ground and surface waters will identify any anomalies.

### **Transfer of Wells**

There are two monitoring wells (piezometers) on site that are less than 30 feet deep. There are no plans for transferring these wells. The Permittee has presented plans to reclaim these monitoring sites according to Utah State regulations.

### **Water-Quality Standards And Effluent Limitations**

The Permittee has provided plans for controlling sediment and effluents from the permit area. All potentially toxic materials will be stored on concrete and contained within a contained

area. Hydrologic structures consisting of ditches, culverts and berms will direct runoff to 5 sedimentation ponds, where sediments will settle out. All flow eventually flows to Sedimentation Pond 6, the only discharge point from the disturbed area. Discharges will be sampled to ensure it meets UPDES standards.

### **Diversions: General**

Figure 7-4 shows the drainages associated with the Savage Coal Terminal (SCT). Undisturbed diversion UD-1 directs flow away from the disturbed area. Figure 7-5 shows the subdrainages of the coal terminal. Table 7-25 provides the culvert design specifications.

### **Diversions: Perennial and Intermittent Streams**

The closest perennial stream to the facility is the Price River. Water is diverted from the Price River into the Carbon and Price-Wellington canals as it enters the central portion of the basin. The canals are diverted upstream from the Savage Coal Terminal and are used for irrigation. Water quality is good, the total dissolved solid concentration in the canal ranges between 250 and 600 mg/L. The canal water is not used by Savage Coal Terminal. All other overland flow at the terminal is ephemeral. The Permittee has a well developed in alluvium adjacent to the river. Water is pumped from the well as needed in the Preparation Plant. The Permittee has a water right to divert water from the river well to the facilities. The Permittee also has a water right for the groundwater flowing through the French Drain to the corrugated stand pipe.

### **Diversions: Miscellaneous Flows**

Hydrologic transport structures on the site were calculated using the 10 yr-24 hr precipitation event determined from the national weather service (NOAA, 1973). It was found to be 3.17 inches. The SCS curve number method (SCS, 1972) was used to calculate the runoff volumes, Section 741. Table 7-18 shows the weighted curve number determination for the drainage. Table 7-19 presents the areas of the subdrainages and the total runoff volumes in acre-feet.

### **Stream Buffer Zones**

There is not a perennial or intermittent stream within 100 feet of the terminal. However, there is a pump owned and used by the Permittee to supply water to the plant on occasion. The pump site is identified as BTCA Area #6 in Section 741. The pump area is located adjacent to the Price River approximately 7500 feet north of the northeast corner of the terminal. It is approximately 0.69 acres. It includes a well, pump, pump house and associated disturbance. The area is in a depression and does not drain.

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### **Sediment Control Measures**

The Permittee has provided information in Section 732, 733 and 741 to address this section. There a total of 5 sedimentation ponds on this site, Plate 7-2. Surface runoff carrying disturbed area sediment is directed to the sedimentation ponds via ditches, culverts and berms. The Permittee has submitted hydrologic design calculations for the hydrologic transport structures and the sediment containment structures (ponds in Section 741. Sedimentation pond design specification and details are provided in Plates 7-4, 7-5 and 7-6. The design capacities of the ponds including the sedimentation storage and runoff volumes are provided in Table 7-21. Sedimentation volumes generated during a precipitation event will be trapped in the ponds. The Permittee has designed the ponds to hold the storage capacity of the 10 yr-24 hr precipitation event plus the sediment volume. Sediment storage volumes have been calculated and markers have been placed in the ponds to cleaning will take place when the sediment level reaches 60 percent of the storage level.

There are seven small areas located within the permit areas that do not drain into the sedimentation ponds. Six of these areas have been designated as best technology currently available because they are small. The areas are shown on Plate 7-2 and described in Section 741. the areas are less than an acre and the runoff is controlled by berms. One area is identified s a small area exemption because it is a buried pipeline from the river pump to the northeast corner of the terminal as described in Chapter 1 and shown on Plate 1-1 and Appendix 7-1. The area is approximately 20 feet wide and 1000 feet long. The pipeline was installed in 1977-78 and is totally buried. BTCA's and the SAE are designed to treat or contain runoff from the 10 yr-24 hr precipitation event.

### **Siltation Structures: Sedimentation Ponds**

The Permittee has supplied designs for Sediment Ponds 1, 2, and 3 in Plate 7-3. These ponds act in series to capture sediment from the northern half of the permit then transmit any overflow to Pond 6. Each of these ponds have a grouted spillway designed to pass the flow of the 25 yr- 6 hr precipitation event. Designs for Sedimentation Pond 6 are shown on Plate 7-4. Pond 5 captures the runoff from most of the area on the south side of the permit. Overflows from Pond 5 flow to Pond 6. Plate 7-5 show the designs for Sedimentation Pond 6.

### **Siltation Structures: Exemptions**

There are 5 areas the Permittee has identified as BTCA (best technology currently available) areas. These areas are smaller than one acre and an alternate sediment control measure such as total containment or runoff is filtered through a silt fence. Only one SME exists on the site, the pipeline that transports water from the pump by the Price River to Sedimentation Pond 6.

### **Discharge Structures**

Discharges from ponds, culverts or diversions flow less than 5 feet per second and considered no erosive. When calculations or site conditions indicate erosive velocities the outlets are protected by grout, rip rap described in Section 741. All impoundment are equipped with spillways sized to carry runoff from a 25 yr-6 hr precipitation event.

### **Ponds, Impoundments, Banks, Dams, and Embankments**

All embankments are designed and inspected by a registered engineer.

#### **Findings:**

The Permittee has submitted sufficient information to address this section.

## **RECLAMATION PLAN**

### **GENERAL REQUIREMENTS**

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

#### **Analysis:**

The Permittee has submitted a reclamation plan in Section 540 of the MRP. A schedule of reclamation is provided in Section 542. All facilities will be dismantled and the site reclaimed.

The Permittee will salvage those materials that can be salvaged. All the other material will be hauled to the landfill. All final grading, preparation and placement of topsoil will be done along the contour to minimize subsequent erosion.

#### **Findings:**

The Permittee has submitted sufficient information to address this section.

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Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

**Analysis:**

**Hydrologic Reclamation Plan**

On final cessation of operations all surface structures and facilities for the operation will be removed. There are no plans to transfer any wells to other parties. The two monitoring wells will be filled and capped. All sedimentation ponds and diversions will remain in place until an effective vegetation cover has been established to reduce suspended solids from the affected area. Once the success of revegetation is determined to be acceptable, all diversions and sedimentation ponds will be removed. The berms around the ponds will be pushed in and compacted to complete the backfilling. The pipeline system consisting of 2 PVC pipes laid parallel in a trench approximately 30 inches wide for a distance of approximately 10,000 feet (Plates 5-7 and 5-8) from the pumphouse to the Price River will be removed along with the pumphouse, pump, grading, and 6 foot CMP well. The pumphouse will be regarded to original contour and reseeded. The area is a natural low spot therefore, the reclamation will be in a small non-draining area.

**Findings:**

The Perimtttee has submitted sufficient information to address this section.

**MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS**

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

**Analysis:**

**Final Surface Configuration Maps**

Plate 5-6 shows the Post mining topography and drainage pattern of the reclaimed terminal area.

**Findings:**

The Perimtttee has submitted sufficient information to address this section.

## **CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT**

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

### **Analysis:**

The Division updates the CHIA when there are changes to the permit area. Rewrite of the MRP will not cause changes to the operation or mine permit area.

### **Findings:**

The Permittee has submitted sufficient information to address this section.

### **RECOMMENDATIONS:**

The hydrologic section of this MRP rewrite is not recommended for approval until the deficiency is addressed.

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